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BRIEF COMMUNICATION

Subdividing the functional psychoses: a family hereditary approach

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SYNOPSIS Family genetic data, based on standardized and independent diagnostic procedures of index and secondary cases, confirmed the dichotomy between schizophrenias and affective disorders. The classical schizophrenic subtypes exhibited a significant tendency towards homotypia among their secondary cases. The genetic evidence did not support the monopolar–bipolar subdivision of affective disorder. Schizo-affective disorders impinged on the clear-cut schizophrenic and affective psychotic disorders and there was no homotypical tendency among the relatives of index cases with this diagnosis.

THE GENETIC ARGUMENT AND METHODOLOGICAL REQUIREMENTS

The diagnostic categorization of the major psychoses depends on social criteria – psychopathology, course and outcome, assumed causation, trigger-mechanism (*Auslöser*) and family hereditary data. Family genetics are concerned with the prevalence of homotypical (i.e. analogical or similar psychopathological characteristics), as against heterotypical secondary cases among the consanguineous relations. Homotypia is traditionally interpreted by geneticists as an indicator of a genetic entity; if absent, then phenocopia is inferred.

From the genetic standpoint, the dichotomy of functional psychoses into a group of schizophrenias (ICD 295) and affective disorders (ICD 296) is based on an increased incidence of the respective psychoses among first-degree relatives: there are about 10 % homotypical disorders, but no increased frequency of heterotypical psychoses. The genetic interpretation of these findings is by far the most convincing. The same argument may also be applied to the question of whether a clinical subdivision of the major functional psychoses may be supported by family hereditary data, i.e. the finding of homotypia in the subgroups. With regard to the classical subdivision of the schizophrenias into schizophrenia simplex (ICD 295·0), hebephrenia (ICD 295·1) and paranoid schizophrenia (ICD 295·3) the genetic evidence has generally been regarded as negative (Gottesman & Shields, 1976, p. 382). However, there may be a tendency towards predominantly homotypical secondary cases in families when particular criteria are employed (Schultz, 1932; Kallmann, 1938; Garrone, 1962; Slater, 1947, 1953; Schwab, 1938; Knoll, 1954). Bleuler (1972) found a tendency towards similarity in the psychoses of siblings in respect of course and outcome, age of first manifestations and premorbid personality. The concept of the subtypes as separate genetic entities is implausible, taking into consideration the difficulties of assessing clear-cut hebephrenic symptomatology without other 'schizophrenic' traits and the frequent admixture of ego-pathology, depending on age, severity and social situation. The subdivision of affective disorders (ICD 296) into monopolar and bipolar groups, as proposed independently by Angst (1966) and Perris (1966), used among other criteria the age of first manifestation, sex, premorbid personality and the characteristics of course as well as family genetic findings.

Apart from the problems of sampling the index cases and of evaluating family data, there are 2 main problems of diagnostic procedure in studies of this type:

(1) Whether the diagnosis is or is not rendered testable by standardized methods.

(2) Whether the diagnosis of the secondary cases is or is not established blindly, i.e. independently from the diagnosis of the index case.

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METHODS

Sampling and evaluation

Taking into account these strict methodological requirements of diagnosis and the independent evaluation of secondary cases we studied 269 probands with a diagnosis of schizophrenia, schizo-affective and affective disorder. The cases were selected randomly from patients admitted to the Psychiatric University Hospital of Zürich which represents a reasonable socio-economic cross-section of the general population. The aim was to collect at least 30 cases in each subcategory.

For diagnostic evaluation the Present State Examination (PSE) (Wing *et al.* 1974) was used among other instruments. Thus we could compare study diagnosis and computer diagnosis. We found a high consensus on the assignment to the major categories of schizophrenia and affective disorder (Scharfetter *et al.* 1976).

Family data were obtained systematically by standardized interviews with the index case and with his or her relatives (consanguineous and not) and from registry office files. First-degree relatives were interviewed personally whenever possible, and the information was completed by the reports of family doctors and in- and outpatient clinics of the relevant regions. From all of these sources the project psychiatrist established a diagnosis without knowledge of the index case.

Morbidity risk figures were evaluated according to the methods of Strömgren (1935) and Slater (1938).

The study population

Excluding schizophrenia simplex (because of the small numbers), 269 index cases were assessed: hebephrenia (33); catatonia (38); paranoid schizophrenia (69); schizo-affective disorder (40); monopolar depressive disorder (59); bipolar or manic-depressive disorder (30). We obtained the relevant data concerning 1577 first-degree relatives (losing only 172 from a total of 1649). Seven hundred and eighty, i.e. 70 % of the relatives still alive, were interviewed personally.

RESULTS

The distribution of homotypical secondary cases among the relatives of the major types of functional psychoses support the notion of a dichotomy between schizophrenia and the affective disorders (Table 1). Among the relatives of the schizophrenic index cases there were found mainly schizophrenic secondary cases, and relatively few affective disorders. The opposite was true of index cases with affective illnesses.

Though the classical subtypes of schizophrenia differ somewhat in the global morbidity risk for schizophrenia and affective disorder, the difference is not significant statistically ($P = 0{\cdot}2$) (Table 2). Catatonia shows the highest global morbidity risk for schizophrenia, and also for affective disorders, when compared with the other subtypes.

Classical schizophrenic subtypes have a tendency towards homotypical secondary cases

Table 1. *Morbidity risk figures (%) of first-degree relatives of index cases with schizophrenia or affective disorder*

	First-degree relatives	
Index cases	Schizophrenia	Affective disorder
Schizophrenia	8·9	1·93
Affective disorder	3·32	11·43

Table 2. *Morbidity risk figures (%) of first-degree relatives of index cases with hebephrenia, catatonia or paranoid schizophrenia*

	First-degree relatives	
Index cases	Schizophrenia	Affective disorder
Hebephrenia	8·44	—
Catatonia	12·80	4·13
Paranoid schizophrenia	6·95	1·5

Table 3. *Morbidity risk figures (%) of first-degree relatives of index cases with hebephrenia, catatonia or paranoid schizophrenia*

	First-degree relatives		
Index cases	Hebephrenia	Catatonia	Paranoid schizophrenia
Hebephrenia	**4·69**	1·87	0·94
Catatonia	4·48	**5·76**	1·92
Paranoid schizophrenia	1·04	0·7	**4·52**

Table 4. *Morbidity risk (%) for first-degree relatives of catatonic index cases*

Schizophrenia total without schizo-affective psychoses	12·8
Catatonia	5·76
Affective disorder total	4·13
Monopolar affective disorder	2·06
Bipolar affective disorder	2·06

Table 5. *Morbidity risk (%) for first-degree relatives of index cases with monopolar or bipolar affective disorder*

	Index cases	
	Monopolar	Bipolar
Schizophrenia total without schizo-affective psychoses	3·46	3·0
Affective disorder total	12·02	9·91
Monopolar affective disorder	9·02	7·71
Bipolar affective disorder	2·15	2·20

Table 6. *Morbidity risk (%) of first-degree relatives of schizo-affective index cases*

Schizophrenia and affective disorder	22·57
Schizophrenia total without schizo-affective psychoses	13·54
Hebephrenia	3·01
Catatonia	7·02
Paranoid schizophrenia	1·5
Schizo-affective psychoses	2·51
Affective disorder total	9·61
Monopolar affective disorder	4·43
Bipolar affective disorder	4·43

(Table 3). The significance of these differences is high ($\chi^2 = 15{\cdot}3$, df = 3, $P = 0{\cdot}005$). Though homotypia is present we would, however, be cautious about regarding it as a strong argument in favour of different genetic entities. The reliability of the diagnostic subgrouping was not tested and the tendency of the clinical manifestations to vary with the course of illness further complicates the issue.

It may be observed that there are some special genetic features among the relatives of catatonic schizophrenics who exhibit the highest global schizophrenia morbidity risk, with the most prominent homotypia among the secondary cases and an increased incidence of both monopolar and bipolar affective disorders (2·06 %) (Table 4).

The monopolar–bipolar dichotomy of affective disorders is not confirmed by these genetic findings, for, as Table 5 shows, the differences between the figures are not significant ($P = 0{\cdot}75$). Monopolar and bipolar affective disorders share the global morbidity risk for schizophrenia as well as for affective disorders. Both types have a higher rate of monopolar secondary cases and an only slightly and equally elevated rate of bipolar cases. In the families of monopolar index cases the number of homotypical secondary cases is not significantly increased.

These findings are in agreement with those of other research groups (Taylor *et al.* 1980). Angst *et al.* (1980) also found many more monopolar than bipolar cases among the first-degree relatives of monopolar as well as bipolar cases. From a genetic standpoint monopolar and bipolar affective disorders do not therefore emerge as separate entities, and some of the differences described in the literature (for example, sex, age of first manifestation) must be interpreted in other ways.

The concept of schizo-affective psychosis is as unclear in its diagnostic limits (Brockington & Leff, 1979) as in its genetic characteristics (Table 6). The relatives of index cases with schizo-affective psychoses exhibited the highest frequency of functional psychoses of both major types (22·57 %). The morbidity risk for schizophrenia of all types without schizo-affective psychosis is 13·54 % (higher than that of the classical schizophrenic subtypes), with catatonic secondary cases being most frequent (7·02 %). Among the affective disorders (9·61 %), monopolar and bipolar types were equally frequent (4·43 %). There was no prominent homotypical morbidity in the families of index cases with schizo-affective disorder (2·51 %). Thus the schizo-affective concept impinges on both of the major psychoses and cannot be regarded as an independent disease.

REFERENCES

Angst, J. (1966). *Zur Aetiologie und Nosologie endogener depressiver Psychosen.* Monograph Gesamtgebiete Neurologie und Psychiatrie no. 112. Springer: Berlin.

Angst, J., Frey, R., Lohmeyer, B. & Zerbin-Ruedin, E. (1980). Bipolar manic depressive psychoses: results of a genetic investigation. *Human Genetics* **55**, 237–254.

Bleuler, M. (1972). *Die schizophrenen Geistesstörungen im Lichte langjähriger Kranken- und Familiengeschichten.* Thieme: Stuttgart.

Brockington, I. F. & Leff, J. P. (1979). Schizo-affective psychosis: definitions and incidence. *Psychological Medicine* **9**, 91–99.

Garrone, G. (1962). Étude statistique et génétique de la schizophrénie à Genève de 1901–1950. *Journal de génétique humaine* **11**, 89–219.

Gottesmann, I. & Shields, J. (1976). A critical review of recent adoption, twin and family studies of schizophrenia: behavioural genetics perspectives. *Schizophrenia Bulletin* **2**, 360–401.

Kallmann, F. J. (1938). *The Genetics of Schizophrenia*. Augustin: New York.

Knoll, H. (1954). Klinisch-genealogischer Beitrag zur Frage der perniziösen Katatonie. *Archiv für Psychiatrie und Nervenkrankheiten* **192**, 1–33.

Perris, C. (1966). A study of bipolar (manic-depressive) and unipolar recurrent depressive psychoses. *Acta psychiatrica scandinavica* (Suppl.) **194**, 1–189.

Scharfetter, C., Moerbt, H. & Wing, J. K. (1976). Diagnosis of functional psychoses. *Archiv für Psychiatrie und Nervenkrankheiten* **222**, 61–67.

Schulz, B. (1932). Zur Erbpathologie der Schizophrenie. *Zeitschrift für die gesamte Neurologie und Psychiatrie* **143**, 175–293.

Schwab, H. (1938). Die Katatonie auf Grund katamnestischer Untersuchungen. II. Teil: Die Erblichkeit der eigentlichen Katatonie. *Zeitschrift für die gesamte Neurologie und Psychiatrie* **163**, 441–506.

Slater, E. (1938). Zur Erbpathologie des manisch-depressiven Irreseins. Die Eltern und Kinder von Manisch-Depressiven. *Zeitschrift für die gesamte Neurologie und Psychiatrie* **163**, 1–47.

Slater, E. (1947). Genetical causes of schizophrenic symptoms. *Monatsschrift für Psychiatrie und Neurologie* **133**, 50–58.

Slater, E. (1953). Genetic investigations in twins. *Journal of Mental Science* **99**, 44–52.

Strömgren, E. (1935). Zum Ersatz des Weinbergschen 'abgekürzten Verfahrens'. Zugleich ein Beitrag zur Frage von der Erblichkeit des Erkrankungsalters bei der Schizoprenie. *Zentralblatt für die gesamte Neurologie und Psychiatrie* **153**, 784–797.

Taylor, M. A., Abrams, R. & Hayman, M. A. (1980). The classification of affective disorders – a reassessment of the bipolar–unipolar dichotomy. *Journal of Affective Disorders* **2**, 95–109.

Wing, J. K., Cooper, J. E. & Sartorius, N. (1974). *The Measurement and Classification of Psychiatric Symptoms*. Cambridge University Press: Cambridge.